NOVEMBER/DECEMBER 2025

23PEPH14B — CRYSTAL GROWTH AND THIN FILMS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. What is homogeneous nucleation?
2. What is nucleation in freezing?
3. How does concentration affect crystallization?
4. Types of crystallization techniques.
5. Differentiate between Melt and Gel growth techniques.
6. Write any three applications of vapour phase growth.
7. Application of pulsed LASER deposition.
8. Definition of spray pyrolysis.

9. Definition of thin film deposition method.

10. Write demerits of thin film formation methods.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Discus about growth from melts.

Or

(b) Construct the process of nucleation in crystal growth.

12. (a) Write a short note with suitable solubility diagram.

Or

(b) Write short notes on miers TC diagram.

13. (a) Give account of structure and importance of Gel.

Or

(b) Write notes about czoehralski method.

14. (a) Analyze structural defects in thin films.

Or

(b) Explain the spray pyrolysis.

15. (a) Write down about quartz crystal oscillator techniques.

Or

(b) Write short notes on structure of thin film.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Discuss in detail about the homogeneous and heterogeneous formation of nuclei.

17. Describe the crystal growth technique.

18. Illustrate melt technique and explain the two types of vapour deposition.

19. Briefly discus RF magnetron sputtering.

20. Define thin film formation and discus various stage in thin film formation.

———————